
Space Weather Forecast

Issued on Tuesday, 15 February 2022 at 12:57 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: Chance of Moderate-class X-ray flares and Minor (R1) Radio Blackouts.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate in the past 24 hours, with a Moderate-class x-ray flare observed at 14/1731UTC from the largest and most magnetically complex region currently on the visible disc, AR2941, which is near the western limb. This was a long duration event, although there is currently no evidence of a Coronal Mass Ejection (CME) associated with this event. Given its location any CME would unlikely be Earth-directed. There are currently five numbered sunspots on the visible, the largest is the aforementioned AR2941, which is classified as a Eki/Beta-Gamma configuration, although given its location, its becoming difficult to assess its classification due to the foreshortening effect. AR2943 continued to develop after emerging from plage, and produced a C4 flare at 15/0518UTC. The remaining sunspots are all fairly small and simple magnetically. A new unnumbered and simple Axx sunspot recently emerged to the west of AR2947, although no further development were observed. No CMEs were in evidence in available coronagraph imagery in the 24 hours.

Solar Wind / Geomagnetic Activity: Earth is currently undergoing a gradual exit from a 'coronal hole' fast wind, with the solar wind speed falling from slightly elevated levels to near background levels. The number of particles in the solar wind and their associated magnetic field were both unremarkable in the 24 hours. The net result of the above solar wind measures was Quiet throughout.

Energetic Particles / Solar Radiation: No solar radiation storms were observed, despite the moderate-class X-ray flare from near the western solar horizon.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is forecast to carry a daily chance (30%) of Moderate-class flares - these most likely from the largest sunspot on the sun until midweek, at which point this risk should then gradually fall as it passes further onto the far side.

Solar Wind / Geomagnetic Activity: No CMEs feature in this forecast period. The only 'coronal hole' fast wind in the forecast period is currently affecting Earth, and is considered to have peaked. Geomagnetic activity is likely to remain Quiet throughout the period.

Energetic Particles / Solar Radiation: No solar radiation storms are expected, although there is a daily Slight Chance of S1, mainly up to and including midweek, before the crossing to the far side of the largest spot.

Geomagnetic Storms:

Geo-Magnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	1	1	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	Yes	30	30	20	5
Very Active	R3 to R5 X	No	2	2	2	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	5	5	2	2
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = cm⁻²sr⁻¹s⁻¹)